

## THE WEATHER ELEMENTS

By P. C. DAY, In Charge of Division

## PRESSURE AND WINDS

With the beginning of the new year the anticyclonic activity, that had been such a marked feature of the weather during the latter half of the closing month of 1924, became less pronounced in the more western districts, but continued with considerable reduction in frequency and extent over the Northeastern States. The local anticyclonic condition that existed over the eastern portion of the middle plateau during the latter half of December, notably in western Colorado and eastern Utah, continued at intervals throughout the month though not so persistently during the middle decade as in the first and last.

The new year opened with an important anticyclone attended by severe cold over New England and the Canadian Maritime Provinces which gradually moved to the northeastward and disappeared on the 3rd. About the 11th another high-pressure area developed northeast of the Great Lakes and moved rapidly toward the mouth of the St. Lawrence River, likewise attended by some sharp falls in temperature over the eastern Canadian Provinces and northeastern New England.

The last important anticyclone of the month moved southward from western Canada toward the United States on the morning of the 25th. By the following morning it had overspread the northern and portions of the middle Great Plains and thence northeasterly to the Lake Superior region and to portions of the Province of Ontario, with temperature falls of  $20^{\circ}$  to  $40^{\circ}$ , the line of zero temperature reaching southern Nebraska and that of freezing into northern Texas. As this anticyclone moved eastward during the following few days it was attended by the lowest temperatures of the month over nearly all districts from the Missouri Valley eastward.

The cyclones were confined mainly to the more southern and eastern districts, or to the more northerly course near the Canadian boundary. Those moving over the southern districts brought frequent precipitation, mostly rains, which were unusually heavy in the Gulf and South Atlantic States, particularly from the 8th to 12th and again from the 15th to 20th. The storms moving along the northern border usually gave only light precipitation, mainly snow.

The pressure as a whole was again above normal as in December, over the greater part of the country, particularly from the Great Lakes to New England, over the eastern Canadian Provinces and in the middle plateau region.

Compared with December, 1924, the average pressure was lower in all districts save from the Great Lakes eastward, and over California and the far Southwest.

The important winds of the month were confined to the Atlantic and Pacific coast districts and to only a few dates. Over the interior the winds were for the most part unusually light for the midwinter month.

The prevailing directions of the surface winds are shown on Chart VI.

## TEMPERATURE

The month was practically free from intense cold waves ushering in widespread and prolonged periods of low temperatures, though there were a few cold waves of moderate importance, chiefly during the final decade.

The greater part of the month was marked by persistent regional contrasts in the temperature conditions, some States or portions of States having lasting cold weather, while other near-by areas were experiencing rather mild weather for the season.

Until about the 20th, cold weather prevailed over most of the middle and southern Plains and the Southwest, without any important breaks. From northern Arizona northward and northeastward to about the 42nd parallel this abnormal cold was especially pronounced and the ground was deeply covered with snow over most of this area.

The Lake region and the Northeast likewise had cold weather, though it did not last so steadily as in the areas previously mentioned. Meantime in the Southeast temperatures were almost always above normal, particularly in Florida; and slightly above normal also from Minnesota westward to the North Pacific coast.

The final decade was marked by two cold waves, the earlier being felt chiefly in the Northeast, but the later extending over most of the eastern half of the country. At the same time decided warmth for midwinter prevailed in most western districts, especially from the upper Missouri Valley westward to the Cascade Mountains.

The closing days were marked by some rapid changes in temperature in many portions, but were mainly mild in the western half and cold in the eastern.

The lowest temperatures occurred chiefly during the middle decade in the western third of the country, at various dates in the middle and northern Plains, but almost always on the 27th or later in the southern Plains and over the eastern half of the country. The lowest temperature reported,  $-48^{\circ}$ , occurred in extreme northern Maine. From Minnesota to Montana and in the elevated portions of the Western States the lowest marks of the month were not particularly low for midwinter. On the other hand, the readings about the 28th in the middle Ohio Valley and to eastward and northeastward were at many points among the lowest of local record.

The highest temperatures occurred usually about the 24th or 25th from New Mexico and Texas northeastward to the middle Mississippi Valley and in many middle Atlantic districts. Elsewhere in the eastern half of the country they usually came about the 6th to 10th. In the western half, except as previously mentioned, they occurred usually on one of the last three days of the month, but in the North Pacific States about the 20th.

The month averaged considerably warmer than normal in Florida and from North Dakota westward to Puget Sound, and usually a little warmer than normal in California, Nevada, Idaho, and Wyoming, also near the Mississippi River, in the western Lake region, and in the Ohio Valley and the districts south of it. There was a deficiency in the mean temperature in nearly all other districts, notably from Texas to Nebraska and thence westward to Utah and northern Arizona, and from Pennsylvania northeastward.

For large portions of Colorado this was the coldest or very nearly the coldest month of record while in some northern portions of New York and New England the deficiency averaged from  $5^{\circ}$  to  $8^{\circ}$  per day.

In southern Florida the month was warmer than normal throughout save during the last three days. In fact from December 15 to January 29 inclusive, 46 days, the temperature was continuously above normal, constituting the longest midwinter period of continued warmth of record in that locality.

## PRECIPITATION

Viewed as a whole the month was one of scanty precipitation. The only considerable regions where the monthly totals were appreciably above normal were the southeastern, south-central, and east-central parts and the far Northwest. In the latter the excesses were moderate, but from eastern Louisiana to New Jersey there was a marked excess, especially from central Alabama to central South Carolina. In Georgia the month brought one-fourth more rain to the State as a whole than any previous winter month of record, while in Alabama and South Carolina it was decidedly the wettest January. The average amount in Georgia was 10.84 inches, but in the central division 12.29 inches. The chief periods of heavy rains in this area were the 8th to 12th and the 15th to 20th. Severe floods followed these heavy rains, the details of which appear elsewhere in this issue.

There was a considerable deficiency of precipitation in Arkansas, Tennessee, and the western portions of North Carolina and Virginia and in the States to the northward, but the consequences were seldom serious. Dubuque, Iowa, had quite, and Springfield, Ill., very nearly the least total precipitation of any January since records began.

In the northern border States there was usually less than the normal precipitation, except from Montana to the North Pacific coast, where there was a slight excess.

In California and Arizona the shortage was serious; southern California had especially little, and in Arizona the unusual shortage resulted in the practical exhaustion of the water supply in many grazing areas.

## SNOWFALL

This was comparatively heavy in northeastern sections, particularly from western Pennsylvania to northern New England. The heaviest snowstorm over this region came during the closing days, when a strip from central Pennsylvania to northwestern Vermont received from 15 to 36 or more inches, the station at Syracuse, N. Y., recording 28 inches within 40 hours.

Near the middle Atlantic and New England coasts there was not so much snow at this time, the heaviest fall occurring either very early or about the 20th. In

large portions of Maryland and northern Virginia the ground was snow-covered throughout the month, a rather unusual occurrence.

In North Carolina and to the westward and northward as far as or slightly beyond the Mississippi River, snowfall was less than the average for January and in the upper Lake region usually a little less than average, but in western Missouri and most of the middle Plains somewhat more than the average.

In the elevated districts of New Mexico, Colorado, Arizona, and California the snowfall was usually less than normal; also in Nevada, except the northeast portion. The North Pacific States, Idaho, and northwestern Montana had usually more than normal. In Utah and Wyoming the new snowfall of January was mainly light, but unusually large portions of those States were snow-covered, particularly during the first half, as a result of December snowfall.

The outlook for the summer water supply in the far West is comparatively good in most northern districts and fair in central, but poor in most Southern States. In practically all of California it is especially poor, though not quite so bad as a year ago at this time.

## RELATIVE HUMIDITY AND SUNSHINE

The relative humidity values throughout the country were in the main slightly above normal, except in the far Southwest, where they were materially below. They were less than normal also locally in the far Northwest and generally over the lower Lake region and portions of the Ohio Valley.

Over the Southeastern States, despite the excessive precipitation, the relative humidity was only moderately high.

## SUNSHINE

Cloudy weather persisted to an unusual extent in the Southeastern States, sunshine being scarcely one-third the possible amount. Similar conditions existed in the far Northwest and in the Great Lakes region, but this is not unusual for a midwinter month.

In most other parts of the country the sunshine was about what is usually experienced in January.

## SEVERE LOCAL HAIL AND WIND STORMS, JANUARY, 1925

The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A more complete statement will appear in the Annual Report of the Chief of Bureau.

Place	Date	Time	Width of path (yards)	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Middle Atlantic States.....	1-2					Snow and sleet....	Street-car and railway service demoralized.....	Official, U. S. Weather Bureau.
Enterprise, Ala. (3 miles south of)	10	8 a. m.				Small tornado.....	Amount of damage not reported.....	Do.
West Elba, Ala.	10	Noon				do.....	Small amount of damage.....	Do.
Shelhorn, Ala.	10	do				do.....	Small amount of damage. In the above tornadoes several persons were injured and a few buildings demolished.	Do.
Barnwell, S. C.....	16	1:30 p. m.			\$3,000	Probably thunderstorm.	Buildings and shade trees damaged.	Do.
Pendroy, Mont. (near).....	18	10:30 a. m.	880		1,730	High wind.....	Buildings on two ranches damaged; also feed and seed barley.	Do.
New Jersey.....	20					Sleet.....	Motor traffic impeded or totally stopped in northern section.	Do.
New England.....	20					Snow and wind.....	No severe damage reported.	Do.
Central New York.....	29-30			3		Snow.....	Arteries of travel generally in bad condition, causing traffic delay; scores of roofs caved in; schools closed; traffic tied up or delayed; 30 inches of snow in 24 hours.	Official, U. S. Weather Bureau; Journal News (Ithaca, N. Y.).
New England.....	29-30					Snow and wind.....	Motor and street-car traffic demoralized in some sections; railway schedules seriously delayed.	Official, U. S. Weather Bureau.